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Folding box for cigarettes

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**Description**

The invention relates to a hinge-lid pack for cigarettes comprising a box part with box front wall, box rear wall, box side walls and base wall, and a lid, which is pivotably attached to the box part and which comprises lid front wall, lid rear wall, lid side walls and end wall.

5 Hinge-lid packs for cigarettes have been employed for decades throughout the world. Also known are embodiments with beveled or rounded pack edges.

The object of the present invention is to design a cigarette pack of the hinge-lid type that achieves an optimum conformation of its shape to the outer form or contour of the pack's contents, which consists of a cigarette group, even when the 10 cigarettes assume a special formation.

In order to achieve this object, the hinge-lid pack according to the invention is characterized in that a region facing at least one of the side walls has a cross-section that is configured as being (approximately) trapezoid in shape, with converging material strips or legs connecting the respective side walls with the box 15 front wall and lid front wall, on one hand, and the box rear wall and lid rear wall, on the other hand, said material strips having a width that is greater than the diameter

of one cigarette and less than the aggregate dimension of two adjacently positioned cigarettes.

One special feature is the adaptation of the cross-sectional contour of the hinge-lid pack to the contour of the cigarette group. Cigarettes at the edge of the pack are 5 positioned such that converging wall legs of the hinge-lid box lie in each case against two cigarettes of two transverse marginal rows, with two cigarettes positioned in each of the (obtuse) angulation positions. Furthermore, each of the converging wall legs abuts two cigarettes of the cigarette group, as do each of the side walls, correspondingly reduced in width, abutting the two cigarettes of the 10 marginal transverse rows.

The lateral regions of the hinge-lid pack which face the side walls are preferably configured such that, for a cigarette group comprising marginal sub-groups of five cigarettes arranged with an outer transverse row of two cigarettes and an adjacent transverse row of three cigarettes, the cigarette group is appropriately enclosed so 15 that each of the converging wall legs lies against two cigarettes of two marginal transverse rows and that each side wall, correspondingly reduced in width, lies against two cigarettes of the marginal transverse row.

The hinge-lid packs, which are configured as having a polygon-like contour preferably in the region of both side walls, can have edges formed by bending 20 between the wall legs, on one hand, and the side walls, front wall and rear wall, on the other hand. However, the preferred embodiment is one in which exhibits rounded edges between the wall legs, on one hand, and the side wall, on the other hand. Furthermore, the edges between the wall legs, on one hand, and the front and rear wall, respectively, on the other hand, are rounded, with all rounded 25 regions conforming in their dimensions to the contour or the dimensions of the cigarettes.

A further special feature is the arrangement and design of a collar arranged in the box part and in principle a constituent element of this type of pack.

Finally, the invention relates to the design of blanks for the production of hinge-lid 30 packs.

Further special features of the invention will be discussed below on the basis of drawings, which show:

- Fig. 1 a perspective view of a hinge-lid pack in its closed position,
- Fig. 2 the pack according to Fig. 1 with open lid,
- 5 Fig. 3 a perspective view of a hinge-lid pack in an embodiment modified with respect to that shown in Fig. 1.
- Fig. 4 the hinge-lid pack according to Fig. 3 with open lid,
- Fig. 5 a spread blank for a hinge-lid pack according to Fig. 1, Fig. 2,
- Fig. 6 a blank for a collar,
- 10 Fig. 7 a spread blank for packs according to Fig. 3, Fig. 4,
- Fig. 8 a blank for a collar,
- Fig. 9 a horizontal sectional view of a hinge-lid pack filled with cigarettes along plane IX-IX of Fig. 1 (left diagram) and a further exemplary embodiment (right diagram)
- 15 Fig. 10 a horizontal sectional view of a hinge-lid pack along the sectional plane X-X of Fig. 3.

The shown packs are hinge-lid packs for cigarettes 10. In its basic design, a hinge-lid pack comprises a (lower) box part 11 and a lid 12. A collar 13, here made from a separate blank, is attached to the front side in the box part 11. Part of the collar 20 13 projects from the box part 11 and is enclosed by the lid 12 when the latter is closed.

Box part 11 and lid 12 are made from a one-piece blank. This blank is constructed to form successive regions in the longitudinal direction for a box front wall 14, a base wall 15, a box rear wall 16, a lid rear wall 17, an end wall 18 and a lid front wall 19. Box part 11 and lid 12 are connected to each other in the region of box rear wall 16 and lid rear wall 17 by means of a transverse hinge line 20 that extends only in the region of the rear wall 16, 17. A lid inner tab 21, connected to a free side of the lid front wall, is folded against the inner side of the lid front wall 19 and connected thereto in the finished pack.

Attached to the box front wall 14, box rear wall 16, lid rear wall 17 and lid front wall 19 are folding tabs for the formation of box side walls 22 and lid side walls 23. These side walls 22, 23 are formed by overlapping and mutually connected folding tabs, namely box side tabs 24, 25, on one hand, and lid side tabs 26, 27, on the 5 other hand. The side tabs 24, 26 form in each case the outer side of the double-layer side walls 22, 23. The side tabs 25, 27 lie on the inside.

One special feature of the hinge-lid box is its design, or construction, in a region adjacent to the box side walls 22 and lid side walls 23. Configured with comparatively smaller width, the box front wall 14, box rear wall 16, lid rear wall 17 10 and lid front wall 19 are respectively connected by means of an intermediate piece to the side walls 22, 23 or to the corresponding side tabs 24...27. These intermediate pieces are a box leg 28, 29 and the respective lid legs 30, 31. These wall legs 28...31 are formed by material strips between the side tabs 24...27, on the one hand, and the associated walls, namely box front wall 14, box rear wall 16, 15 lid rear wall 17 and lid front wall 19, on the other hand. All wall regions of the blank are delimited from one another by longitudinal folding lines 32 and transverse folding lines 33.

The described regions of the blank – as seen in the cross-section of the pack – are arranged at an angle to one another. The material strips, namely box legs 28, 29 20 and lid legs 30, 31 are directed at an acute angle 39 of in particular approximately 30° to the adjacent box front wall 14 or box rear wall 16, and to the lid rear wall 17 or lid front wall 19, respectively. The side walls, namely box side walls 22 and lid side walls 23 are preferably directed at an angle 40 of approximately 60° to the material strips or legs 28...31. This results in an approximately trapezoidal-shaped 25 pack cross-section in its side region. (Fig. 9, Fig. 10).

The dimensions of the hinge-lid boxes and in particular of the approximately trapezoidal side region arise from the dimensions of the cigarettes 10, but in particular from the selected formation of a cigarette group 34 as the contents of the hinge-lid pack. For a preferred capacity of twenty cigarettes 10, a formation of 30 transverse rows 35, 36 of cigarettes 10 provided, with each marginal transverse row 35 consisting of two adjacent cigarettes 10 and an adjacent transverse row 36 consisting of three cigarettes 10. The cigarettes 10 of the adjacent rows 35, 36 are thus arranged in a "saddle position", i.e. offset to one another. The contents of the

hinge-lid box thus exhibit a convergent cross-sectional profile at their edges. This cross-sectional profile is accommodated by the profile of the hinge-lid pack in an almost completely positive fit.

One special feature involves the dimensions of the material strips or legs 28...31.

5 These have the same width, which is considerably larger than the diameter of a single cigarette 10, yet smaller than the sum diameter of two cigarettes 10 lying adjacent to one another. The chosen dimensions make it possible for cigarettes 10 in each of the transverse rows 35, 36 to be arranged in the region of an angulation 37, 38 formed by folding lines. This results in a dimensionally stable hinge-lid pack, since each of the wall areas, which are set at an angle to each other, namely legs 28...31 and side wall 22, 23, are supported by two adjacent cigarettes 10. As an alternative, the cigarette group 34 can also be formed such that a transverse row 35 of two cigarettes is arranged only at the respective edge of the group, which is otherwise formed by transverse rows 36 of three cigarettes 10 each.

10 15 The design of the hinge-lid pack in its lateral region results in a savings of material. Accordingly, only the side walls 22, 23 have a two-layer configuration, i.e. with the side tabs 24...27 having a width which corresponds approximately to the width of the side walls 22, 23.

20 A further special feature is that individual or all upright pack edges, i.e. the angulations 37, 38, are rounded. The exemplary embodiment pursuant to Fig. 3, Fig. 4, Fig. 7, Fig. 8 and Fig. 10 shows a particularly advantageous embodiment, in which merely the angulations 37 are configured as rounded edges with a preferably circular rounding to conform to the dimension or radius of the abutting cigarettes. In the most favorable case, the cigarettes 10 situated at the edges or 25 corners assume a positive-fit when encased by the walls of the hinge-lid pack. Here the side tabs 24...27 are configured as being much smaller in width so that an overlap occurs only outside the roundings of the angulation 37. In the region of the angulation 38, the corners remain sharp but obtuse.

30 The design of the hinge-lid box with exclusively rounded edges or angulations 37, 38 is shown in a cross-section profile in the right detail illustration of Fig. 9. Both angulations 37, 38 are rounded, preferably of a circular shape which conforms to the dimensions of a cigarette 10.

The contents of the hinge-lid pack, namely the cigarette group 34, are surrounded by an inner liner 41 made of tin foil, paper or film.

The blanks for the production of the hinge-lid pack in its various embodiments are configured in a special manner. Pursuant to Fig. 5, the middle region defined by 5 box front wall 14, box rear wall 16 etc. is configured with a smaller width than that of conventional hinge-lid packs. The overall width of the blank is also smaller than the width of a blank for a standard hinge-lid pack.

Base wall 15 and end wall 18 conform to the contour of the hinge-lid pack, specifically by means of trapezoid-shaped edge regions oblique edges 42 and a 10 transverse edge 43. In the finished pack, the oblique edges 42 abut the box legs 28, 29 or the lid legs 30, 31. The transverse edge 43 abuts in each case the inner box side tab 25 (base wall 15) or the inner lid side tab 27 (end wall 18). In the embodiment pursuant to Fig. 7, a rounding 44 is formed in each case between the 15 oblique edges 42, on one hand, and the transverse edges 43, on the other, corresponding to the curves of the angulations 37.

The curves or rounded angulations 37, 38 in the exemplary embodiment pursuant to Fig. 3, Fig. 4, Fig. 10 or in the right-hand exemplary embodiment pursuant to Fig. 9 are defined by a curvature strip 45 of the blank. This curvature strip 45 usually comprises a number of parallel scorings which are impressed upon the 20 packaging material (thin cardboard) by stamping. In the embodiment in the right-hand illustration of Fig. 9, the inner longitudinal folding line 32 is also configured as a curvature strip 45.

Base wall 15, on one hand, and end wall 18, on the other hand, are connected to the box side wall 22 and the lid side wall 23, respectively, specifically by means of 25 base corner tabs 46 and lid corner tabs 47, respectively. The corner tabs 46, 47 extend as a continuation of the inner box side tabs 25 and the lid side tabs 27, respectively. In the exemplary embodiment pursuant to Fig. 1, Fig. 2 and Fig. 5, the corner tabs 46, 47 are configured to provide a matching, positive-fit support of the outer tab edges in the region of the base wall 15 to the box front wall 14 and 30 box legs 28. Correspondingly, the exposed tab edges of the lid corner tabs 47 abut the lid front wall 19 and the adjacent lid leg 30 (Fig. 2). This increases the dimensional stability of the pack.

In the exemplary embodiment with rounded edges (Fig. 3, Fig. 4 and Fig. 7), the width of the corner tabs 46, 47 correspond to the width of their associated folding tabs 25, 27. The overall width of the blank is not exceeded in the region of the corner tabs 46, 47. In the finished hinge-lid pack, the corner tabs 46, 47 are 5 connected to the base wall 15 and end wall 18 by adhesive bonding.

The collar 13, which here is made from a separate blank, conforms to the shape of the hinge-lid pack. In the embodiment pursuant to Fig. 5 – and applicable to Fig. 1, Fig. 2 – a collar front wall 48 is delimited by collar folding lines 49. Joined at either side are laterally delimited material strips 50, 51, which are delimited from each 10 other by a more pronounced collar folding line 52. In this exemplary embodiment the latter comprises a perforation line, which ensures a reliable folding of the material strips 50, 51 in their angled position to each other. A special feature is a collar leg 53, bordering the outer material strip 51, which is delimited by a collar folding line 49 and which in the finished pack abuts the rear box leg 29 and lid leg 15 31 (Fig. 4). This collar leg 53 ensures a high degree of stability. Furthermore, by being folding inwards in the pack's contour, this collar leg 53 facilitates the closing 15 of the lid 12 once it has been opened.

In the embodiment pursuant to Fig. 8 – applicable to Fig. 3, Fig. 4 – the middle 20 collar folding line 52 of Fig. 6 has been replaced by a curvature strip 54, which ensures the conformity of the collar to the pack's shape pursuant to Fig. 3, Fig. 4 in the region of the rounded angulation 37 (Fig. 10).

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